

Biological hydrogen production of *Chlamydomonas reinhardtii*, a marine green alga

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Hydrogen has many advantages as an energy source. It is the simplest, naturally occurring element, and is found in numerous materials. It is hoped that hydrogen, an energy carrier, will join electricity as the basis for a globally sustainable energy system using renewable energy. Moreover, hydrogen use does not produce CO₂ or other greenhouse gases. The methods used to produce hydrogen depend on the quantity and purity of hydrogen desired. We believe that biological production is the most important method, using photosynthetic microbes to produce H₂ from sunlight energy.

The production of hydrogen by *Chlamydomonas reinhardtii* UTEX 90, a marine green alga, was observed. After dark fermentation, up to 500mg/L acetic acid and 1000mg/L ethanol were produced. Moreover, 3.5 μmol/ mg DCW hydrogen were produced. Photosynthesis of hydrogen under sulfur deprivation was also carried out.